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W-7000 Stuttgart 30(DE)(54) **A method of assembling a cable coil package.**

(57) A method of assembling a cable coil package (10) which comprises the setting up of a carton blank to form an open top container (12) comprising four side walls (42, 44) and a bottom, setting up of a carton blank to form a cable reel (14), fixing the cable reel in a central position on the bottom of the container and locating the container with the cable reel on a controllable turntable (16) which rotates the container and the cable reel perpendicular to the axis of the cable reel during coiling up of the cable.

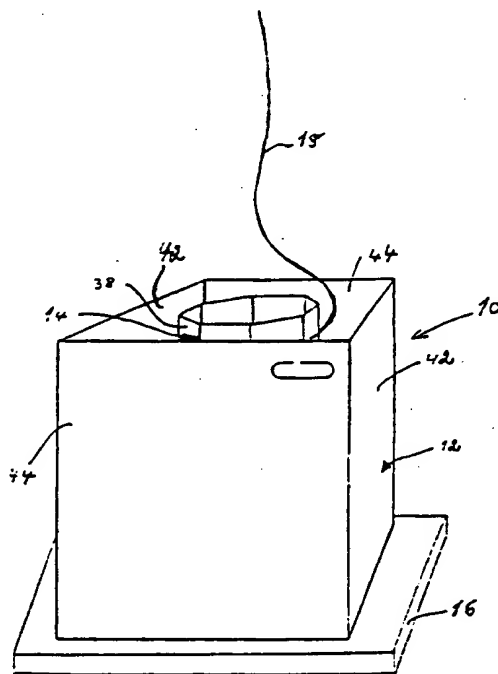


Figure 1

**EP 0 480 259 A1**

The present invention relates to a method for producing a cable retainer having a cable, said retainer including a wrapping box open at the top and comprising side walls and a bottom section, and a cable drum extending from the bottom section within the wrapping box.

Within the industry sector manufacturing cable material, preferably electrical cables, there are many various systems known to wind, coil or reel a cable. The easiest and most well known system includes winding up of a cable on a coil of bobbin-type. The bobbin consist of a cylindrical coil with double, fixed and preferably circular end supports in the form of flanges. The cable is wound up on the bobbin which thereafter normally is rotated, in order to be uncoiled later in connection with use.

Another type of cable retainer is the so called drum-retainer, which means a comparatively long cylinder, where the cable is reeled on the thus created vertical bobbin and then again is unreel in connection with use. This type of cable retainer means however a more expensive construction than the previously mentionend but makes unreeling more effectiv, which is an advantage in connection with a later industrial machining of the cable, for example in connection with cable system manufacturing.

With a further type of cable retainer a cable is reeled up internally or externally on a centrum roller according to the same system as for the drum retainer. The difference between the construction with coil, eventually bobbin, and other cable retainers is that the cable can be more easily unreel at an intermittent varying movement by use of the latters.

It is known to use several different methods for controlling - oscillate - a wire or a cable in connection with reeling on cable drums. An object is here to obtain maximal fullness, maximal amount of wire at the outer or inner edge, against central bobbins or at an arbitrary point on a bobbin.

In Swedish patent no. 7415032-7 (published application 400261) is shown a method for a compactly reeled bobbin with programmable oscillator and with variable wire rate.

There are several different technical solutions for the types of cable drums known on the market. In Swedish patent application no. 14587/72 is for example disclosed the use of resilient flanges.

In Swedish patent no. 7612289-4 (published application no. 403464) is shown an example of a cable drum with engagement and in Swedish patent no. 8403207-7 (published application no. 442 507) is shown an example of a foldable cable drum.

It is also previously known to use various types of mantel engagements in the end walls of the drums. Thus, Swedish patent no. 7502598-1 shows

engagements in cavities. Swedish patent no. 8801878-3 shows engagement possibilities in circumferential tracks and Swedish patent no. 7502565-0 shows how the drum is fixed in the end walls, the flanges, with engaging pins.

The German Offenlegungsschrift no. 3703018 A1 shows a multiside central core made of corrugated board and provided with special engagement in plastic flanges. The bobbin created in this way is very easily mountable and demountable.

The main object of the present invention is to create a method of the type mentioned in the initial paragraph, were a cable retainer is obtained by simple means with a cable amount, which is controllable for optimal fullness.

The object of the new method is also to provide a cable retainer, which at the same time is a good cover for the cable, is easy to stack and thus also to transport and which is cheap in manufacturing.

The product produced by this new method should when the cable is removed be possible for reuse or to be destroyed in a way which is suitable for the environment.

A further object of the new method is to produce a product-cable retainer - which has a low weight in order to further facilitate handling and transport.

The new method, which makes it possible to fulfil the above mentionend claims, is according to the invention primarily characterized by that the wrappingbox and the cable drum are put together separately near to a reeling-up place for the cable starting with two corresponding disklike corrugated board pieces, that the cable drum is fixed centrally in the wrapping box and that the cable retainer, located on a controllable worktable, is imparted a rotating movement transversely to the axis of the cable drum during reeling-up of the cable between a cable drum and the inner side of the side walls of the wrapping box facing the same.

Further objectives and advantages of the new method can be clearly seen in connection with the following specification with reference to the attached drawings, where

fig. 1 is a perspective view showing a built up cable retainer arranged on a controllably movable working table for reeling-up of electrical cables,

Fig. 2 shows a cable retainer from above,

Fig. 3 shows a cable retainer seen from above with reealed up cable,

Fig. 4 shows in planview a corrugated paper material intended for building up of a wrapping box.

Similar parts in the various figures are provided with the same reference numbers.

The arrangement shown i fig. 1 includes a

cable retainer 10, which is built up according to the principles of the invention and include a wrapping box 12 with a cable drum 14 fixed therein. The cable retainer 10 is placed on a working table 16, which can preform a controllable rotating movement perpendicular to the axis of the cable drum 14. This is marked by arrows arranged closed to the arrangement. The figure also shows how the actual cable or wire 18 is reeled up in the cable retainer 10 in connection with this rotating movement, which preferably is either circular or elliptic.

According to the method of the invention the cable retainer 10 is built up by two separate corrugated paper materials 20, 22. These are shown in figs 4 and 5, fig. 4 illustrating the corrugated paper material 20 for the cable drum 14 and fig. 5 illustrating the corrugated paper material 22 for the wrapping box 12. In both figures the dotted lines mark the places where folding should take place.

The corrugated paper material 20 for the cable drum 14 is intended to be folded along eight folding lines for creating of the drum itself, whereby the outer parties 24, 26 are intended to overlap each other and be interconnected by infolding of two similar so called locking lugs 28, arranged at the top and at the bottom respectively. At the lower part of the corrugated paper material 20 stay folding lugs 30, 32, 34, 36, are extending which are sideways foldable along respective folding lines in order to center the cable drum 14 in connection with putting it in place in the wrapping box. In the present case the cable drum 14 will be formed with totally eight longitudinal sides 38, 40 parallel with the axis of the cable drum 14.

The corrugated paper material 22 according to fig. 5 is intended for a wrapping box 10, which after folding along respective dashed lines will contain four side walls 42, 44 and a bottom part consisting of bottom folding lugs 46, 48. In the corrugated paper material 22 are cuttings 50 making it easy to have a "handle" for lifting the cable retainer 10.

The extending lugs 30, 32, 34, 36, 46, 48 on the two corrugated paper materials, which after folding will be placed over or against each other, may be glued together in order to further strengthen the cable retainer 10. This is also true for the parts 24, 26 in fig. 4 and the parts 52 in fig. 5.

Fig. 2 shows the cable retainer 10 from above and illustrates how the cable drum 14 is located centrally in the wrapping box 12. The stay folding lugs 30, 32, 34, 36 of the cable drum 14, here for clarity shown with chessboard marking, rest against the innersides of the wrapping box 12 at its four corners. The stay folding lugs 30, 32, 34, 36 are preferably so dimensioned that they are lightly pressing against the side walls of the wrapping box. Due to this the construction will be very stable. Between the stay folding lugs 30, 32, 34, 36

and the bottom parts created by the bottom folding lugs 46, 48 is preferably applied an adhesive material for further fixing of the cable drum 14 in the wrapping box 12.

In fig. 2 is shown the upper locking lug 28 after bending and locking of respective parts 24, 26.

The wrapping box 12 according to fig. 3 is in principle consistent with the wrapping box according to fig. 2 but is illustrated with reeled up electrical cable/wire 18. As shown the reeling-up has been made in such a way, that the cable well fills the space between cable drum 14 and the facing side walls of the wrapping box 12. This has been possible by the programmable controlling of the movement of the working table 16 during the reeling-up operation.

Modifications of the above described method steps are possible within the scope of the following claims.

Claims

1. A method to produce a cable receptacle (10) having a cable (18), said receptacle including a wrapping box (12) open at the top and comprising side walls (42, 44) and a bottom section, a cable drum (14) erecting from the bottom section within said wrapping box, characterized in that said wrapping box and cable drum are put together separately near to a reeling-up place for the cable starting with two corresponding disc like corrugated board pieces, that said cable drum is centrally fixed in the wrapping box, and that the cable receptacle, located on a controllable work table, is imparted a rotating motion transversally to the axis of the cable drum during reeling-up of the cable between the cable drum and the side walls of the wrapping box facing the same.
2. The method according to claim 1, characterized in that the corrugated board piece of the wrapping box by folding is given the shape of a multi-side box.
3. The method according to claim 2, characterized in that the wrapping box at the folding of the corresponding corrugated board piece is shaped to comprise four side walls as well as said bottom section.
4. The method according to any of claims 1-3, characterized in that the bottom of the wrapping box is formed by co-operating bottom folding flaps included in the corrugated board piece thereof.
5. The method according to any of claims 1-4,

characterized in that the corrugated board piece of the cable drum by folding is given the form of a multi-side cable drum.

6. The method according to claim 6, **characterized** in that a cable drum by folding of the corresponding corrugated board piece is formed to include eight longitudinal sides. 5
7. The method according to any of claims 1-6, **characterized** in that the cable drum is fixed in the wrapper box by means of backing-up folding flaps extending from one side of the corresponding corrugated board piece, said flaps by folding being backed up against the inside of the side walls of the wrapper box adjacent to said bottom section. 10 15
8. The method according to any of claims 4-7, **characterized** in that at least certain folding flaps overlapping each other are glued together. 20
9. The method according to any of claims 1-8, **characterized** in that said wrapper box is given an external colour print. 25
10. The method according to any of claims 1-9, **characterized** in that the control of the motion of the work table and then also of the cable receptacle is programmed for reeling-up of an optimum quantity of cable in the cable receptacle. 30

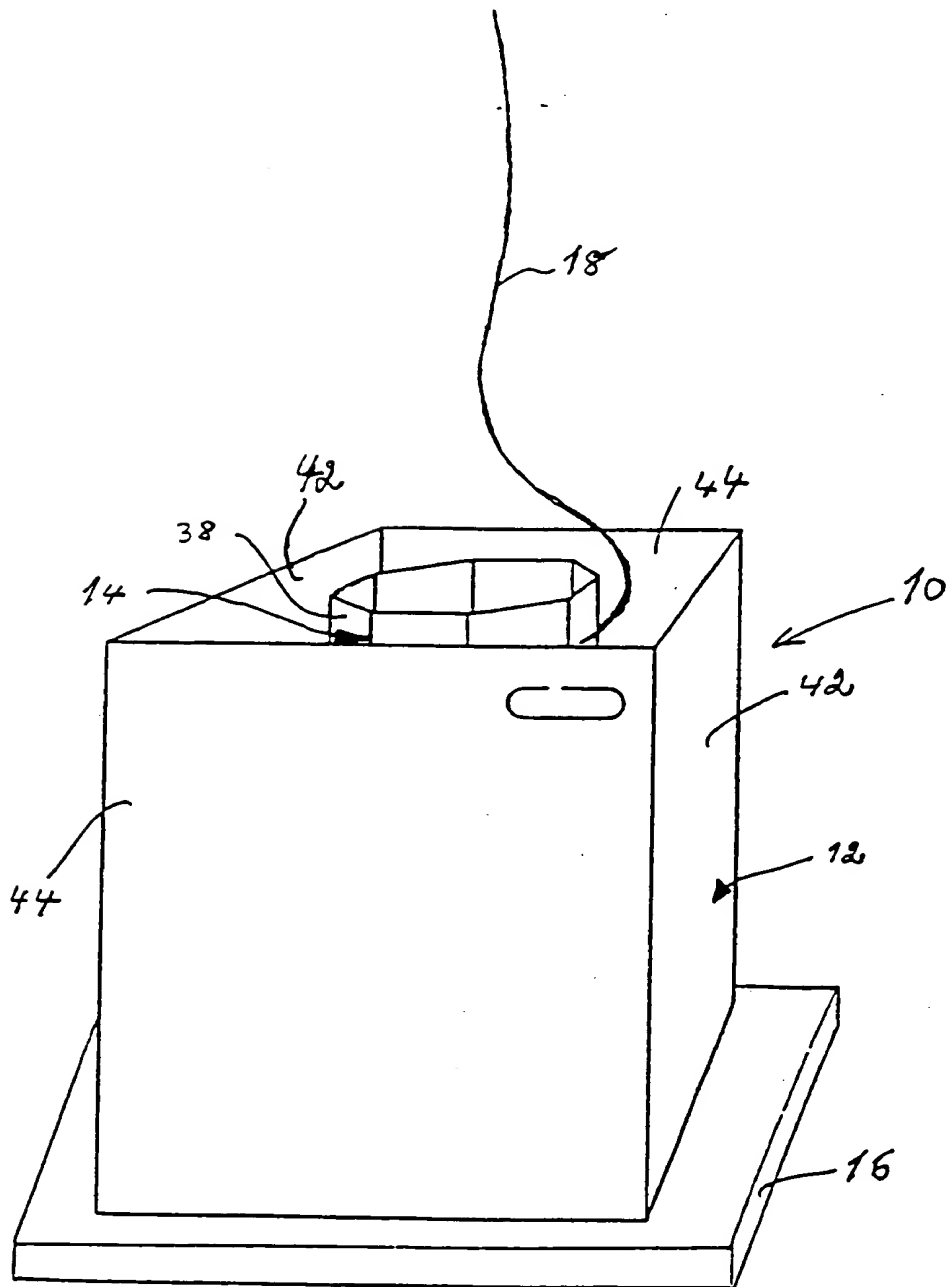
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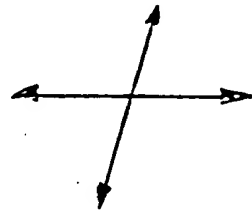
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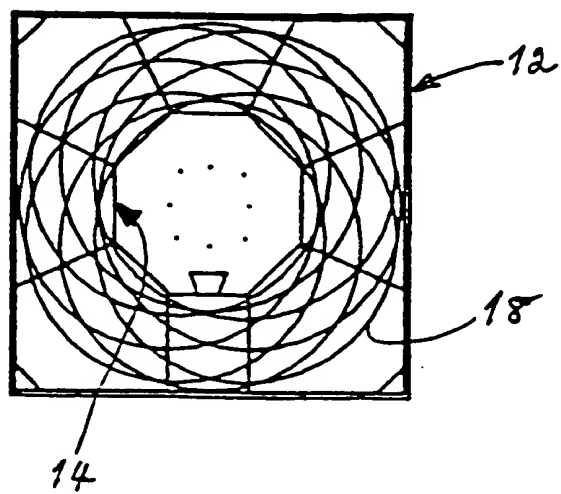
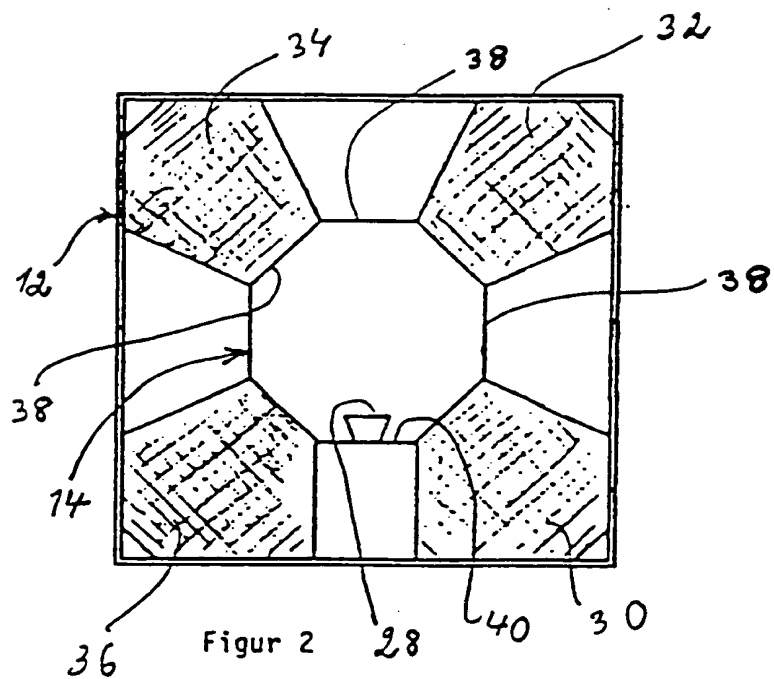
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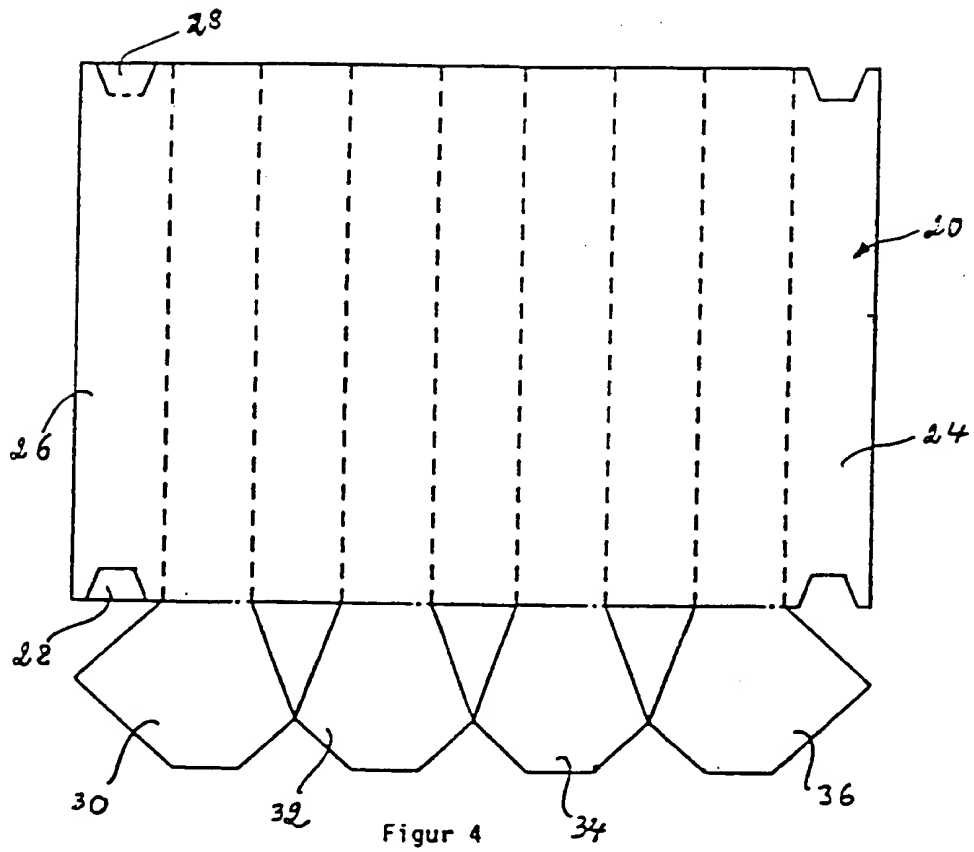
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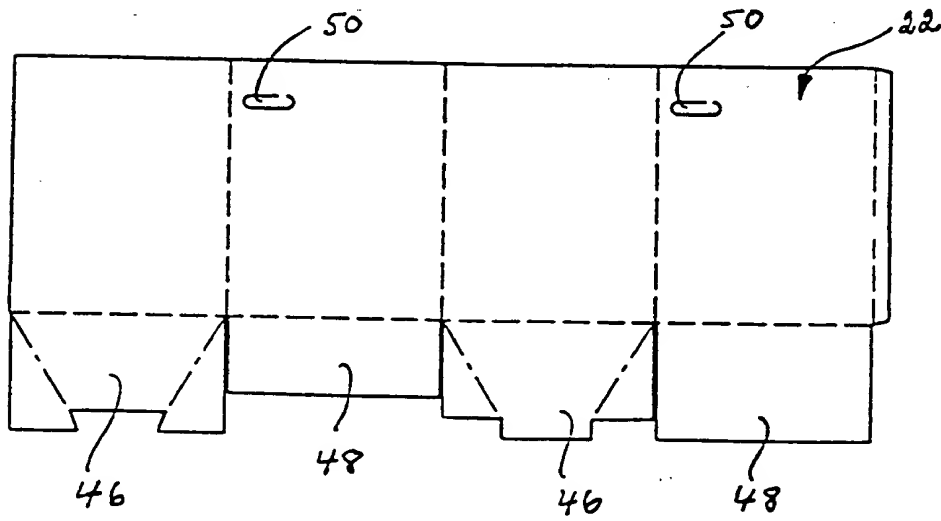
Figur 1







Figur 4



Figur 5